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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/536,637	03/28/2000	Hitoshi Nakano	684.2985	5659

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EXAMINER

CIRIC, LJILJANA V

ART UNIT	PAPER NUMBER
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3743

DATE MAILED: 12/26/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/536,637

Applicant(s)
Hitoshi Nakano

Examiner
Ljiljana V. Ciric *LVC*

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Oct 9, 2001
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11-20 is/are pending in the application.
- 4a) Of the above, claim(s) 12-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11, and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☒ The proposed drawing correction filed on Oct 9, 2001 is: a) ☐ approved b) ☒ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 20) ☐ Other: _____

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DETAILED ACTION

Response to Amendment

1. This Office action is in response to the amendment filed on October 9, 2001.
2. Claims 1 through 9 and 11 through 20 remain in the application, of which claims 18 through 20 are new and of which claims 12 through 17 remain withdrawn from consideration for being drawn to a non-elected invention, wherein the election was made without proper traverse in Paper No. 7.
3. The amendment filed on October 9, 2001 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the proposed drawing correction newly shows the semiconductor manufacturing equipment, the inspection equipment, and the measuring equipment as being located connected to, but outside the chamber. This is not supported by the original disclosure.

Applicant is required to cancel the new matter in the reply to this Office action.

Response to Arguments

4. Applicant's arguments filed on October 9, 2001 have been fully considered but they are not persuasive. In particular, while applicant has not attempted to present any arguments against the examiner's rejection of claim 10 under 35 U.S.C. 103(a), and while applicant is admitting that

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the *Crawford* reference does include a refrigerator together with first and second heat exchangers, applicant argues that the *Crawford* reference “is not understood to teach or suggest, inter alia, an air conditioner that includes a refrigerant that is circulated between a refrigerator and a first heat exchanger and a coolant circulated between the first heat exchanger and a second heat exchanger.” This argument is not found to be persuasive by the examiner in that the *Crawford* quite clearly shows an air conditioner that includes two separate coolant circuits, with one circulating a coolant from the compressor 28 to the first heat exchanger 33 via condenser 27 and with the other circulating another coolant through the other side of the first heat exchanger 33 as well as through both of the air-to-liquid coils 26 and 45, each of which reads on the second heat exchanger as claimed. Applicant is respectfully referred to page 2, column 1, lines 38-66.

Drawings

5. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on October 9, 2001 have been disapproved because they introduce new matter into the drawings. 37 CFR 1.121(a)(6) states that no amendment may introduce new matter into the disclosure of an application. The proposed drawing correction of Figure 1 shows the semiconductor manufacturing equipment, the inspection equipment, and the measuring equipment as being connected to, but outside of, the chamber 1. The original disclosure does not support the showing of semiconductor manufacturing equipment, inspection equipment, and measuring equipment connected to, but outside of chamber 1 and space 13 within chamber 1. On the contrary, the original disclosure only supports locating these pieces of equipment within

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chamber 1. Please note that showing the various pieces of equipment in rectangular box form is acceptable, however.

6. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features must be shown or the feature(s) canceled from the claim(s): the semiconductor manufacturing equipment [claim 1], the inspection equipment [claim 11], and, the measuring equipment [claim 11]--*all disposed within the chamber*; the semiconductor manufacturing equipment being a semiconductor exposure apparatus [claim 18]; the inspection equipment being a mask inspection apparatus [claim 19]; and, the measuring equipment being a laser interferometer [claim 20]. No new matter should be entered.

Applicant is required to submit a proposed drawing correction in reply to this Office action.

Claim Rejections - 35 U.S.C. § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

8. Claims 1 through 5, 7, 8, 11, and 18 through 20 are rejected under 35 U.S.C. 102(e) as being anticipated by *Endo* (filed on March 28, 1997).

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Endo discloses the apparatus essentially as claimed, including, for example: a chamber or enclosure 2 enclosing semiconductor manufacturing equipment or, more specifically, projection exposure apparatus 2A; a refrigerator or freezer 22 using a refrigerant 23; a first heat exchanger or cooler 20; a second heat exchanger or cooler 8 or 14; an air blower or fan 15; a heater 7, 13, or 19; temperature sensors 5 and 17 which are disposed inside the chamber 2 read on the measuring equipment as cited in claim 11; and, temperature sensor 11 disposed adjacent mask R reads broadly on the mask inspection equipment as cited in claim 19.

The reference thus reads on the claims.

Claim Rejections - 35 U.S.C. § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Endo*.

As described in greater detail above, *Endo* discloses the inventive apparatus essentially as claimed, but does not specify, for example, the coolant as being water or a fluoride inert liquid or an anti-freeze liquid. Nevertheless, Official Notice is hereby taken that it is conventional to use any one of water, anti-freeze liquids, and fluoride inert liquids as coolants in air conditioners.

It would thus have been obvious to one skilled in the art at the time of the invention to choose, based on specific performance/design criteria, any one of a number of known coolants,

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including water or a fluoride inert liquid, in order to optimize the performance of the air conditioner under the expected operating conditions, for example.

11. Alternately for 1 through 5, 7 through 9, 11, and 18 through 20, claims 1 through 9, 11, and 18 through 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Crawford*.

Crawford discloses, essentially as claimed, an air conditioner for supplying conditioned air to a chamber or room 6. As in the instant invention, the air conditioner is disposed in space 7 which is adjacent to the chamber or room 6 and is operably connected with the chamber or room 6, with the air conditioner comprising a refrigerator (condenser 27, compressor 28, motor 29, refrigeration coils 26), a first heat exchanger or evaporator/cooler 33, a second heat exchanger which reads on reheating coils 45 or refrigeration coils 26, an air blower or fan 23, a heater which reads on reheating coils 45, a reservoir 10, and pump 14. Thermostat 47 reads on the measuring or inspection equipment as claimed. *Crawford* also shows the air conditioner to include two separate coolant circuits, with one circulating a coolant from the compressor 28 to the first heat exchanger 33 via condenser 27 and with the other circulating another coolant through the other side of the first heat exchanger 33 as well as through both of the air-to-liquid coils 26 and 45, each of which reads on the second heat exchanger as claimed. Applicant is respectfully referred to page 2, column 1, lines 38-66 for support.

Crawford, does not, however, specifically disclosing the chamber as enclosing semiconductor manufacturing equipment, nor the specific elements of this semiconductor manufacturing equipment. Nevertheless, as in the previous Office action, Official Notice is hereby

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taken that it is well-known in the art to use high performance air conditioning equipment during semiconductor manufacturing in order to facilitate obtaining more precise temperature control, and thus, for example, more precise alignment of the equipment with the wafers during the manufacturing process. For example, it is standard practice to use mask inspection equipment and laser interferometers with semiconductor manufacturing equipment such as semiconductor exposure equipment.

It would thus have been obvious to one skilled in the art to modify the air conditioned chamber and air conditioner of *Crawford* so as to specifically utilize the same in conjunction with semiconductor manufacture, for example, in order to better control atmospheric conditions during the process and thus minimize defects.

Conclusion

12. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure. *Sakai* discloses a semiconductor manufacturing apparatus with refrigeration cooling. *Lester* and *Iwamoto* each discloses a chiller apparatus with precise temperature control.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ljiljana (Lil) V. Ciric, whose telephone number is (703) 308-3925.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ira Lazarus, can be reached on (703) 308-1935. The fax phone number is (703) 305-3463.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.


LJILJANA CIRIC
PATENT EXAMINER

lvc

December 17, 2001